

MEDICAL EXAMINER.

DEVOTED TO MEDICINE, SURGERY, AND THE COLLATERAL SCIENCES.

No. 24.]

PHILADELPHIA, SATURDAY, JUNE 15, 1839.

[Vol. II.]

Report made in the name of the Committee on Mineral Waters for 1837. By M. PH. PATISSIER.

(Continued from page 326.)

CHAP. II.—On the manner in which Mineral Waters act.

THERE are two things to be particularly remarked in the action of mineral waters taken at their springs. 1st. They act as a hygienic agent; this manner of acting is common to all, and powerfully assists their medicinal properties. 2d. They act by means of their constituent principles, which impress upon the organization changes more or less pronounced. It appears from an examination of the clinical facts reported by the inspecting physicians, that mineral waters employed in drinking, in baths, in douches, and in vapour baths, always stimulate internally or externally with more or less force. They act principally, then, by stimulating in different degrees, by promoting in the organs more abundant secretions and excretions, and, in certain cases, by bringing back to their normal state those which exercise these functions with too much energy; but to be useful, this stimulation should be maintained within just limits; if it is slow and gradual, it relieves and cures old complaints; if too strong, it exasperates them and revives latent sources of irritation.

This stimulation, which Borden compares to that of coffee, and whose intensity bears a relation to the proportion of saline and gaseous matters contained in the water, to the temperature of the baths, and to the nervous susceptibility of the patient, is apparent after a few days of treatment, by general lassitude, depression of strength, wakefulness, increase of pains, inflammation of wounds and issues, and by a febrile movement; in a word, it brings chronic diseases to a stage momentarily acute. One of the results, then, of the use of mineral waters, is to aggravate, for a brief period,* chronic affections; this constitutes a very frequent transition from disease to cure. This exacerbation is sometimes so acute, that the inspecting physician is obliged to suspend, for a time, the use of the water, and to prescribe cooling drinks, emollient baths, and even blood-letting. Nor is it rare for patients to recover, under the influence of a mineral water, their appetite and cheerfulness, and, soon afterwards, to see their old sufferings return with a new intensity; it is thus that, during the use of mineral baths, rheumatic pains are revived, or are exasperated, phenomena which are almost always the prelude of their cessation. It is then a very

frequent effect of the treatment to revive allayed pains, or to exacerbate those already existing, for their complete removal afterwards. It is very important that patients should be informed of this action of the waters, in order that they may not allow themselves to be discouraged, and thus lose the benefits of a treatment, commenced, in appearance, under unfavourable auspices.

Mineral waters act principally upon two great surfaces; in drinking, upon the gastro-intestinal mucous membrane; in baths, douches, and vapour baths, upon the skin; they excite there two membranes, which, in their turn, act upon the other organs connected with them, by numerous sympathies, increase the activity of their functions, and modify their vitality. Conveyed in the act of drinking, into the primæ viæ, absorbed and carried into the most minute ramifications of the vascular system, the water penetrates every portion of the economy, and establishes in the diseased organ a functional labour, of greater or less activity; under its influence the strength is invigorated; the circulation, before languid, resumes its activity; warmth is recalled into the parts which it had abandoned; and the whole body is animated with a new movement, or, in the words of Borden, is *new mounted throughout*.

Mineral waters are, some purgative, some diuretic, some diaphoretic, according to the nature of the principles which compose them, the particular state of the individual who uses them, the quantity which he takes, the manner in which they are administered, and the different circumstances which precede, or which accompany their employment.

The temperature of mineral baths has also a great influence upon the stimulation of the economy; thus the same bath which might be emollient at 35° cent., (95° Far.) would become powerfully stimulating at 39° to 41°, ($102\frac{4}{5}^{\circ}$ to $105\frac{1}{5}^{\circ}$), and is a powerful irritant at 42° to 45°, ($107\frac{3}{5}^{\circ}$ to 113°), a temperature which can be supported only during a few moments. It is then essential to watch with care the graduation of the temperature of baths; it is in this that consists, in part, the secret of the surprising cures effected sometimes in thermal establishments. We must not think, however, that the stimulation resulting from mineral baths depends solely upon the degree of their temperature; the quantity, and greater or less energy of the mineral principles which they contain, contribute also to develop it. We know, indeed, that the sulphurous ingredients, that carbonic acid, the alkaline carbonates, the ferruginous salts, and other saline matters, are not

* At Greoulx, 20 patients out of 301 experienced an aggravation of their diseases, and at Plombières, 18 out of 107 became worse, at least for a short time.

without action upon the skin; experience teaches us that the more active principles the warm mineral waters contain, the shorter time the patient should remain in the bath. Thus the use of the sulphur baths of Bourbonne, of Balaruc, of Mont d'Or, of Vichy, &c., taken even at a moderate temperature, ought not to be continued more than a half hour or an hour at a time, lest there be too great an excitement of the nervous system,* whilst that of the warm baths of Nevis, Luxeuil, Bains, Plombières, Bagnères de Bigorre, Bourbon, Lancy, &c., which are rather deficient in ponderable principles, and, consequently, little exciting, can be prolonged with advantage to the patients for three or four hours. The proof of the tonic effects of mineral bathing is, that their use, although repeated every day for a month, instead of enfeebling the patients, as baths of common water do, strengthens them, and imparts a new energy to all their functions, which effect depends, without doubt, upon the constituent elements of the water upon their degree of temperature, and perhaps upon the electric fluid which they contain.

We will say nothing of the stimulating effects of douches and vapour-baths, inasmuch as their action is well known to all physicians. As to sea bathing, it excites the skin so strongly, either by the saline principles of the water, or by the percussion of the waves, that after being continued for a few days, the patients complain of itching and redness of the skin, and of eruptions, similar to those of measles or scarlatina.

The stimulating effects of mineral waters are, as we see, of high practical importance; the physicians of preceding ages, without doubt, fixed the *seasons*, that is to say the space of time during which patients should remain at watering places, in consequence of their observations on this head. The duration of the mineral treatment is ordinarily from twenty to thirty days. Although many chronic diseases cannot be cured in so short a time, it is no less true that if the water has not produced the desired effect at its expiration, it is necessary in general to discontinue its use, inasmuch as its continuation will be more injurious than useful; in like manner, if after this period the patients do not find themselves cured or partially relieved, they should suspend the use of water, that the benefit obtained from it may not be undone. Indeed, as mineral waters have the effect of bringing chronic diseases to an acute stage, there is a degree of stimulation which cannot be passed without danger. If the patients persist in not observing the prescribed limits in their use of the water, there finally supervenes a general uneasiness, thirst, bad taste, dryness of the skin, fever; in a word, all those symptoms which announce that excitement has passed to inflammation. Custom has then with reason established the *seasons*, which ought to be the shorter, as the action of the water is more energetic. The arguments against a prolonged

treatment, may likewise be urged against taking mineral waters a short time after having discontinued their use, or against making a second *season*. However, when the water is mild and little exciting, it may be taken again to advantage after the lapse of a fortnight.

The stimulation from the use of mineral waters accounts also for their consecutive or slow effects. If the salutary action of the mineral liquid is sometimes felt during its use, it happens more frequently that it manifests itself, as we have before said, some time after. We can readily conceive that an excitement which has pervaded all the tissues, must remain a longer time in the diseased organ, and that it must be calmed before the beneficial effects derived from the water become apparent. For this purpose it is necessary that the patients, after quitting the watering place, should continue for a month or two the diet which was prescribed during their use of the water, and that they should abstain from all active remedial treatment. Hence, in order to know what may be the power of mineral waters, it is often much better to interrogate patients who have stopped taking them, than those who still continue to take them.

The reflections which we have submitted to you, gentlemen, prove to you that in the excitement of the whole economy resides one of the great medicating forces of mineral waters with the diseased individual; the same excitement is also manifested, though in a manner less apparent, with the healthy individual; in a state of health, mineral waters, drank in small quantities, increase, in general, our appetites, and give a greater activity to our functions; administered in baths at the temperature of 35° cent. (95° Fah.) they impart a new vigour to muscular action; but the question may be asked, if mineral waters may be used with impunity in drinking and bathing in a state of health, how can they do injury in a state of disease? This can be explained without difficulty: in the first case they invigorate equally all the systems of the economy; whereas, in the second case, they communicate an additional excitement to the diseased organ, which when too strong becomes dangerous. Under these circumstances, mineral waters have similar effects to those of wine and coffee, which, as we know, are powerful stimulants. We can without inconvenience, and even with advantage in a state of health, make a moderate use of these liquors, which become injurious in a state of disease.

It appears then, from the above, that the physician in prescribing the mineral water, and

* It is for the same reason that sea-baths ought to be of short duration; that is to say, of five or six minutes.

* M. Pages, however, the inspecting physician of Bagnères, recommends that healthy persons should abstain from the use of mineral waters, as he has seen several who, after three warm baths of three quarters of an hour in length, have been taken with inflammatory fevers which required a vigorous antiphlogistic treatment. In a state of disease, on the contrary, the *tolerance* of the system for the waters is very pronounced; and what is worthy of remark is, that this tolerance diminishes as the disease approaches its cure.

the inspector in administering it, have for their object to produce a general and local excitement, which they ought to graduate according to the nature and degree of the lesion and the temperament of the patient. Thus, for example, in nervous diseases the baths should be of the temperature of the air, and prolonged; the douche should be tepid, short, and in the form of a shower bath; in old rheumatisms, in local paralyses, and in stiffness of joints, recourse should be had to hot baths and douches, and to vapour baths and douches. If it is wished to produce a stimulation still stronger, opposite means are put in play at the same time; thus baths are given at different temperatures, douches given more or less cold in steaming rooms, or cold and hot douches, alternately, to the same individual. Employed under these different forms, mineral waters, when administered by skilful physicians, can be made to fulfil a great number of therapeutical indications.

Though their power of stimulating explains many of the curative effects produced by mineral waters, and though this mode of their action is the most evident and the most easy to prove, still we should be in error were we to suppose that it is the only one. Is it to stimulation alone that can be attributed the efficacy of the waters of Mont d'Or, of Bonnes, and of Canterets, in chronic diseases of the chest? Were this the case all mineral waters would be adapted to the cure of these affections, inasmuch as all are stimulating. If mineral waters acted only as instruments for producing excitement, we can see no reason why a great many other stimulants may not be substituted for them in the treatment of a number of chronic diseases, but which we know are far from being of the same value, and from fulfilling the same indication. It is certain, too, that besides stimulating, mineral waters, according to the difference of their properties, direct their impression specially upon different organs of the economy. Thus sulphurous waters have special action in diseases of the skin, the waters of Vichy in engorgements of the abdominal viscera, the waters of Mont d'Or and Bonnes in chronic diseases of the chest, &c. It is not to be doubted that, conveyed into the circulation, mineral waters have the property of changing the constitution of fluids and solids, of giving consistence or fluidity to the humours; it is for this reason that several writers on therapeutics class them among the alterants. Without being exclusive supporters of the humoral theory, we cannot refuse to admit facts furnished by sound observation; for example, this modification of the humours incontestably belong to the waters of Vichy, for if two glasses of this liquid be taken, containing about two grammes (30.88 grs. Troy) of bicarbonate of soda, the urine becomes promptly alkaline, and a single bath in the same water will produce the same effect; and this alkalization is not limited to the urine; it is remarked, likewise, in the sweat, which in a state of health is always acid. It is probable that all waters which contain a certain quantity of bicarbonate

of soda, are endowed with the same property; such are the waters of Vals and of Saint Nectaire.

To sum up, mineral waters act by stimulating our organs, by modifying the humours, and by exercising a specific action upon some one or other apparatus of the economy; these three kinds of action may take place at the same time; for example, the waters of Vichy are exciting, they render all the humours alkaline, and they direct their impression specially upon the viscera placed in the subdiaphragmatic region.

As mineral waters are stimulating to a degree more or less pronounced, it is easy to foresee that they cannot be suitable in acute diseases in which they would augment the activity of the circulation;* they are, on the contrary, of great use in chronic affections, which are aggravated by an active treatment; the good effects arising from their use in such diseases, are the more durable in proportion as they are brought about gradually, or as they are of a chronic nature, like the diseases themselves. Under the influence of mineral waters, the removal of chronic diseases is sometimes effected by critical efforts of nature, which are manifested in the stools, in the perspiration, in the urine, or by the appearance of eruptions on the surface of the body. Sometimes, on the contrary, the cure takes place without any appreciable crisis; the patient experiences no unusual change in his condition; only he continues to get better, and progresses each day towards a cure, without the physician's being able to account for the efficacy of the water. Chalybeate and alkaline waters present particularly this phenomenon.

It is in thermal establishments that it is easy to convince one's self, that many chronic diseases are occasioned and maintained by a suppression of the transpiration of a habitual flux, or of a rheumatismal, gouty, or herpetic principle, which becomes thus thrown back upon the internal organs; but is this retrocession the effect or the cause of the disease? It is evidently the determining cause, when the disorder of the viscus is posterior to the retrocession, and this happens in the greater number of cases. However this may be, it is most rational to endeavour to recall the morbid principle without. Nothing is better adapted for fulfilling this indication than mineral baths, which, in provoking the skin to a moderate congestion of blood, but over a large surface, augment the energy of the cutaneous apparatus, re-establish the important junctions of this emunctory, recall the fluids from the centre to the circumference, and produce often an exanthema resembling scarlatina or a miliary eruption, which is called at Lonsesche, *le poussé*. This eruption, brought on by a healthy effort of nature, may produce a revulsion very useful in gastralgias, pulmonary catarrhs of a chronic nature, &c., and is often a precursor of the re-establishment of health.

* The waters of the Seltz, and other cold acidulated waters, are, notwithstanding, sometimes prescribed in typhoid fevers, irritation of the stomach, &c. The bitter saline waters, such as those of Seidlitz and Pullna, are employed in cases of acute diseases, in which most mineral waters would be contraindicated.

We must not think, however, that mineral waters succeed in all chronic diseases; they do injury in lesions of the brain, in epilepsy, apoplexy, aneurisms of the heart and large vessels, in disorganization of the viscera, and in scirrhus and cancerous degenerations; mineral waters, in all these cases, quicken the circulation, excite fever, and hasten the death of the individual.

Mineral waters are so little known as to their therapeutical effects, to the greater number of medical men, that they are often prescribed for patients whom the inspecting physicians are obliged to send away, because they would be more hurtful than advantageous to them. M. Bertrand was forced, in 1836, to advise against the use of the water more than forty patients who had been sent to him.* Similar errors, unfortunately too frequent, bring the medical art into disrepute, and take away all hope from the patient. Persuaded that a portion of these mistakes will be prevented, and that a true service will be rendered to practising physicians, by specifying the cases in which certain mineral waters ought to be preferred, your committee has endeavoured to resolve this problem in therapeutics, by taking for a basis the preceding considerations upon the action of the waters, and principally the facts gathered by the inspecting physicians. We will now communicate to you the remarks which we have made upon this interesting point of practical medicine, in a rapid glance over the chronic diseases, which are met with most frequently at watering places.

FOREIGN CORRESPONDENCE.

LETTER FROM DR. HARLAN.—No. III.

Séances of the Royal Academy—M. Daguerre's Photogenic Discovery—Mortality among the Prostitutes of Paris—Epidemic among the Cows—Diseases of the Silk-Worms—French Surgeons—Mortality after Operations—M. Roux—Dr. Blandin's mode of treating Stumps after Amputation—Professor Breschet's Operation for Varicose Veins—Treatment of Fractures by the Immoveable Apparatus—M. Velpeau.

PARIS, April 30th, 1839.

To the Editors of the Medical Examiner.

GENTLEMEN,—Numerous pressing occupations, up to the present time, have effectually prevented

* List of diseases for which the use of the waters of Mont d'Or was thought, by M. Bertrand, in 1836, not to be advised.

Hypertrophy of the heart,	4
Phthisis in the last stage,	9
Active Pneumonia,	5
Scirrhus of the stomach,	3
Hysteria in a high degree,	4
Hemiplegia, with cerebral congestion,	3
Chronic metritis, with fever,	3
Venereal Periostitis,	3
Rheumatism, with hectic fever,	5
Acute gout,	2

41

the continuance of my correspondence. For the same reason, I have taken no notes of my daily observations, but hope, nevertheless, that some account of the general results may not prove altogether uninteresting to your readers. The weekly meetings of the National Institute—the daily exercises of the hospitals—the tri-weekly open days at the Jardin des Plantes, together with the urgent demands of Parisian society, leave me but little time for other occupations.

The Academy of Sciences, the only section of the Institute open to the public, holds its séances every Monday, at 3, P. M. The seats in the area outside those of the members, are always filled with visitors before half past 2, and those who arrive later are not admitted. This would have proved a great barrier to my attendance, had not the urbanity of my friend, Professor Blainville, of the Jardin des Plantes, secured me one of the eight chairs immediately before the President's chair, and devoted to foreign professors. The meetings are always well attended by the members; and more memoirs are usually presented than the Academy can receive, or the perpetual secretaries, M. Arago and M. Flourens, would be able to despatch. The crowds of savans, both foreign and native, who always claim admittance, shows the general interest that these séances excite.

Among the numerous interesting memoirs to the reading of which I have listened, none has so much riveted my attention as the account of the Photogenic discovery of M. Daguerre—the first annunciation of which was considered as fabulous. M. Daguerre's office, adjoining his splendid diorama near the Boulevard, was daily beset with the curious, demanding to know the truth of this new power of fixing an image,—the inventor was obliged, in self-defence, to close his doors,—this was just before my arrival in Paris, and previously to the reading of the memoir before the Academy of Sciences, where this highly important and interesting discovery occasioned much discussion and debate. I, however, enjoyed the rare opportunity of inspecting the portfolio of M. Daguerre, through the kind attentions of Mr. Walsh, by whom I was introduced. Whilst examining the unique productions of M. D.'s portfolio, and listening to his explanations, I felt as in the presence of a superior power. Among the principal productions of this new process presented to our admiration, I must mention, 1st, a view of the great gallery joining the Louvre to the Tuilleries; 2d, a view of l'Isle de la Cité,

and the Towers of Notre Dame; 3d, views of the Seine, and several of its bridges; 4th, views of some of the Barrières of the Capital; 5th, views on the Boulevards; 6th, interior of the Chambers, with statuary, furniture, &c. These designs were of different epochs, from four years to four weeks, and were done at different seasons, and at various hours of the day, some by the light of the sun; some during a shower of rain, and some within doors, with a moderate light;—nothing could equal the beauty, accuracy, and perfection of these designs, which were equally magnificent when viewed by a magnifying glass, especially all *immoveable* objects. The process will not succeed with objects in constant motion; as an example, we observed a pair of carriage horses, in which one of the animals was headless, that part having been in continual motion. In answer to my question, what time was required for the entire process, M. D. stated that he could prepare his sensitive paper in two hours, and complete the design in from five to ten minutes,—or, continued he, “I only prepare the paper, and hold it up to nature, and she executes the drawing.”

The time necessary for the execution of a view, when a great power of tone is expected, varies with the intensity of light, consequently the process is affected by the seasons, and even by the time of day, and by climate; in Egypt, for example, a view could be executed in one-third less time.

The process of M. Daguerre not only exacted the discovery of a substance more sensible to the action of light than any hitherto known to philosophers and chemists, it was also necessary to possess the means of depriving this substance of this new property at will, and M. D. has the merit of accomplishing this also. When his designs are once completed, they may be exposed to the direct rays of the sun, without undergoing any alteration. The extreme sensibility of M. D.'s preparation is not the only character which distinguishes his discovery from those imperfect attempts formerly made to draw profiles on a layer of muriate of silver, which salt being white, is blackened by exposure to light, the white portions of the images becoming black, whilst the black portions, on the contrary, remain white. Upon the prepared screens of M. D., the drawing and the object are both similar—the white corresponding to white, the demi-tints to the demi-tints, the black to the black.

To demonstrate the extreme sensibility of M. D.'s preparation, he has succeeded in producing

an evident white impression from the image of the moon, thrown through the focus of a moderate lens upon one of his prepared screens. A similar experiment was once made with the muriate of silver, without any effect, by MM. Laplace, Arago, and Malus.

The *modus operandi* in producing these designs, when the paper is once prepared, will be readily understood by all who are familiar with the camera obscura originally invented by Porta; every one has admired the neatness, truth of colour, form, and tone, with which exterior objects are reproduced upon the screen placed in the focus of the large lens which constitutes the essential part of this instrument, and have admired only to regret that these beautiful impressions could not be preserved. These regrets, together with the poetical expression—“fleeting as a shadow”—are henceforward without an object—M. D. having invented an artificial retina upon which the optical image leaves a perfect and lasting impression; or, in the language of M. Arago, “in the chambre noire of M. Daguerre, light itself reproduces the forms and proportions of exterior objects with a precision almost mathematical,—the photometrical relations of the various white, black, and gray parts, are exactly preserved,—but the red, yellow, green, &c., represent the demi-tints, for the new method creates designs, and not coloured pictures.”

But, such designs! There is nothing in the arts that bears any analogous approach to them; the water is real water, the sky and clouds represent realities, the perspective and shading are the perfection of nature. The invention of M. Daguerre is the result of the assiduous application and labour of many years, during which he had as collaborator, M. Niépee, of Chalons-sur-Saône, recently dead. Some reclamations as to priority have been published by Mr. Talbot, of London, but he has failed in establishing his priority, and the results of his process are not similar to those of M. D.; in Mr. T.'s impressions the white portions of the image are black, and the black are white.

I regret to add that this inimitable portfolio of M. Daguerre, together with the splendid paintings constituting his diorama, was reduced to a mass of smoking ruins in three days after our visit; the premises took fire at 2 P. M., whilst M. Daguerre was on a visit to Professor Moss's, examining his Electro-Magnetic Telegraph, and as M. D.'s property was not insured, his prospects, at present, are ruinous.

My object in the present letter being to communicate results, rather than details, I must not enlarge further on other numerous and interesting memoirs presented to the Academy of Sciences; there is no subject, more or less related to science, that does not, some time or other, come under discussion at its séances. A curious fact was stated recently in a statistical memoir, viz.: only one case of disease out of thirty occurs among the prostitutes of Paris—one of the happy results of the sanitary laws, which exact a weekly surveillance of medical inspectors; but even this three and a half per centage is enough, in such a town as Paris, to fill two large hospitals,—and the disease in question is indubitably a prevalent one among the “gentlemen” of Paris. These, probably, obtain this proof of “attachment” from a class of society “above suspicion.”

An “epizootic” or epidemical disease prevailed among the cows last winter in the neighbourhood of Paris; it was characterized by a contagious, vesicular eruption on the udder; it formed the basis of several memoirs of the professors of the Veterinary School at Alfort. The disease was never fatal, nor did it communicate any deleterious qualities to the milk, and it is only referred to now to show how much attention is paid to this interesting department of science by the savans of Paris. It is also recorded that the cows at Passy have recently been affected with the “cow-pock.” The opportunity of fresh revaccination was improved with happy effect, the vaccine thus obtained being much more active. The question was started also, whether or not the cow was originally affected with this disease by inoculation from the human subject. I presume the experiment will sooner or later be made to inoculate the cow with the natural small-pox matter, and the modifying results noticed. We often listen to instructive memoirs on comparative anatomy, (especially fossil osteology,) geology, geography, rural economy, &c. &c., which, together with a very important memoir on the diseases of the silk worm, which destroys millions of worms in this country, and which consists in the growth or development of a species of cryptogamous vegetable of the genus *Muscardine*—the subcuticular adipose matter of the worm—we must refer to another opportunity.*

*Inasmuch as silk culture appears to have taken root at last in our country, and will soon, no doubt, add greatly to its agricultural resources, I may here remark, that excellent memoirs on

Parisian hospitals and French surgery might be presumed, *à priori*, to be the first objects of attraction to a practical surgeon; but I cannot but confess that a longer acquaintance with them, a

the *Muscardine*, by Professor Audouin, have been communicated to the Academy of Sciences, and which were subsequently published in the “*Annales des Sciences Naturelles*” for October and November, 1837, January, 1838, and in the “*Comptes Rendus*” for 22d April, 1839. M. Bassi, of Lodi, was the first to announce, in 1835, the cause of this pestilence, so long the dread of the silk culturers of Italy and the South of France. When a colony of this useful insect is attacked, its ravages are instantaneous and general; none of those attacked have any chance of escape.

After numerous experiments, M. Audouin has arrived at the following conclusions, viz.:

“1st. That the *Muscardine* may be spontaneously developed, and in all places, when certain combined circumstances favour this development.

“2d. That it is not a disease confined to the silkworm, but that it is general, and may be exclusively peculiar to the class of insects.

“3d. That the disease, or *Muscardine*, may be propagated not only from silkworms to insects of very different species, but that, having spontaneously arisen among one of these species, it may, when transmitted to the silkworm, produce in them the same disease which shows itself in silk establishments, (magnaneries,) and which is designated under the name of ‘*Muscardine*.’

“4th. That during this transport, which may be indefinitely varied by operating upon insects of orders, families, genera, and species, different or alike, the cryptogamous plant, and the disease which it produces, experience no change.

“5th. That if the dissemination of the sporules in the air, be the means which nature employs for the reproduction of the plant, its artificial development may, nevertheless, be produced by inoculation of certain of its parts—its ‘thallus,’ for example—in the adipose tissue of the insect; that is to say, in the same soil in which the sporules have already vegetated.

“6th. In fine, by this artificial mode of infection, the cryptogame invades the adipose tissue much more rapidly, which occasions more promptly the death of the animal.”

Subsequently, the following letter from a well-known agriculturalist, M. Poidebard, of the department of the Rhone, was communicated to the Academy of Sciences:—“There has resulted from the repeated experiments and observations which I have made in my magnanerie, (silk establishment,) a very important remark, viz.: a *magnanerie*, annually infested by the *Muscardine*, may, nevertheless, be made to yield a good harvest, by anticipating the period of the invasion and development of the disease by accelerating the education of the worms, which will allow them time to finish their cocoons before

more extended course of investigation, and a more familiar intercourse with their most eminent teachers of surgery, have in no small degree lessened the admiration with which I once viewed the *éclat* generally attributed both to the men and the institutions. It is true, we cannot too much admire the long-continued and laborious application by which they have attained perfection as anatomists, and the consequent manual dexterity in operations, so universally admitted as a distinguishing characteristic of French surgeons,—and here their dexterity or superiority ends. Not only so: this dexterity itself has been obtained at the expense of principle, and at the expense of life; thousands are annually consigned to a premature grave by operations not always necessary to be performed at all, or improperly timed, or performed in cases that must terminate fatally, with or without operations. The mortality occurring at the Hôtel Dieu, perhaps one of the best, is absolutely frightful in amputations alone; the surgeons admit a loss of ninety-five per cent.; and one of the internes admitted, that during his residence for one year at the Hôtel Dieu, not one case of recovery occurred after amputation! I esteem M. Roux, the surgeon-in-chief of this extensive institution, as a personal acquaintance, and would not heedlessly detract from his hard-earned reputation; and in

the germ of contagion has made progress enough to occasion a general mortality.

"The following are the experiments on which my opinion is founded:

"1st. The silkworms of the white race, named *Sina*, whose term of existence does not exceed thirty days, reckoning from birth to the completion of the cocoon, have been constantly less injured than those of the *yellow* race, whose term of existence extends ten days longer.

"2d. The most precocious of the worms of the white race, were in no way affected by the disease.

"3d. Those a little tardy were affected, but in small numbers.

"4th. The more backward perished in much greater proportions.

"5th. Finally, the yellow silkworms, much more tardy, were nearly all destroyed."

It has been incontestably proved, that *contagion* is one of the most constant characters of the Muscardine.

I am convinced, Messrs. Editors, that you will not consider the above extracts foreign to the purposes of a medical journal; you know too well the extent to which the investigation of the diseases of the inferior animals has tended to the elucidation of the philosophy of life and disease in our own species.

thus alluding to the results of my own personal observations, I have the interests of science only in view.

M. Roux possesses a grave, earnest, and decided character; but, like most others of his profession here, he is over-fond of displaying his manual dexterity. I have heard him beseech a patient to submit to an operation, as if it was the greatest favour conferred upon the operator; the operation once performed, the patient is pretty much consigned to his fate, for the after treatment of French surgeons I consider little better than no treatment at all. The constitutional demands, the habit, diathesis, or idiosyncrasies of the patient, are almost universally and entirely overlooked, and hence, together with the foul air of the hospitals, the dreadful mortality of these pest-houses. On the very first *coup d'œil* of the wards of these hospitals, nothing but disastrous consequences could be anticipated from one hundred to one hundred and fifty human sufferers, crowded together, side by side, and exhaling each the noxious effluvia peculiar to the gorgon form of diseases which afflict the inhabitants of rooms constructed on the worst possible principles for the purposes intended, and in which ventilation was not thought of, and where classification of disease has never been attempted. The unhappy effects of a foul atmosphere, in cases of wounds, are familiar to every professional reader,—as a remarkable instance of which, we may refer to the Dutch army of Batavia when attacked by the British navy, when every case of solution of continuity, however slight, resulted in gangrene. As a lecturer, M. Roux is animated, though by no means eloquent. During a private interview I held with him at his house the other day, he complained seriously, and lamented the state of French surgery of the present day in comparison with its former state; no one surgeon now, he said, could obtain half so many *operations* as formerly,—there were so many hospitals, and then each institution was "*si partagé*," "*si isolé*," there being eight or ten surgeons to each, and then almost every department of surgery being pursued in particular by some surgeon of eminence, that but few opportunities comparatively were left now days for the surgeon of a general hospital to show his skill. Only seven cases of lithotomy occurred in his own wards last year. Thus the diseases of the eye, the ear, hernia, club-foot, affections of the bladder and urinary organs, venereal disease, &c. &c., have each a hospital devoted exclusively to themselves.

M. R. is on the most familiar terms with his patients. In going his daily rounds from 7 to 9 A. M., he has always something funny, encouraging, or coaxing, to say to them all; for one he has a poke in the ribs with his finger, for another a box on the ear, &c. I have seen him make a convalescent reel with a blow on the side of his cheek, for asking him for something good to eat—all in the best possible humour. He sometimes becomes very affectionate, and kisses a patient on whom he has just inflicted a severe operation; and this salute, the students say, always prognosticates the death of the sufferer.

M. Roux mentioned to me Physick, Warren, and Mott, as the only American surgeons with whom he was acquainted; and, judging from them, said he wondered at the large and rapid fortunes that were accumulated by American surgeons—a consummation which he feared would never attend the efforts of Parisian surgeons.

In person, M. R. is rather beneath the ordinary stature, of a sanguino-phlegmatic temperament—features blunt and ill-favoured—one eye projects from its socket, and has a cast in it. When earnest in discourse, his countenance is especially contorted.

Dr. Blandin is also attached to the Hôtel Dieu. He has lately been coaxing his *stumps* to heal by the application of warm air after amputations, the stump being enclosed in a glass *caisse*, and air heated to the natural temperature of the body caused to pass constantly through it, is left without further dressing. Healing by adhesive inflammation, until within the last few years, was unknown in Parisian hospitals; from time to time some of the surgeons have attempted the adhesive process, but they are by no means fully aware of its importance. These stumps appeared to be granulating well, which may probably be accounted for by the simple circulation of air thus artificially produced. He has not yet published his results. It appeared to me rather an empirical practice.

Previously to leaving the Hôtel Dieu for the present, I must allude to Professor Breschet's method of operating for the radical cure of varicose veins. Your professional readers are already familiar with the construction of his instrument, consisting, briefly, in two parallel pieces of steel, brought together by screws, so as to press upon the included veins; the pressure is continued for several days, the patient keeping his bed; the integuments included above and below the veins slough; the veins are involved in the inflamma-

tion, and their sides adhere, obliterating their calibres. I have seen but one case involving the cord on both sides, in which the cure was apparently completed, the instrument being used on one side at a time.

On contrasting this operation with the method practised by M. Velpeau, of La Charité, I give the preference to the latter; it is less tedious, less complicated, less dangerous, and, what is no inconsiderable advantage, it is applicable to enlarged veins in any part of the body. M. V.'s method consists, simply, in passing a strong needle beneath the vein, and applying a ligature in circles, and not the figure of eight ligature. In a few days numerous veins are thus obliterated.

I have not been so forcibly impressed with any surgical improvement, since my arrival in Paris, as that of the treatment of fractures on the plan of Suetin and Velpeau, by means of "*Dextérine*" bandages. In my opinion, nothing but prejudice, superannuated or personal, can prevent the universal application of this method by all who are acquainted with it. Some of the Parisian surgeons have thus neglected it. At La Charité all other plans have long since been banished, and Velpeau and his assistants deserve much credit for the very great dexterity with which they so successfully treat all cases of fracture. There is, at present, a patient under treatment for fracture of the tibia and fibula, who was permitted to walk the ward in five or six days after its application. The same occurred since our arrival here, in a case of fracture of the os femoris, where the patient walked in fifteen days after the application of this bandage. These precocious efforts in similar cases are not, however, advisable. Its application to the treatment of fractured thigh is more effectual than any of the other methods, besides being so much more agreeable to the patient, and so much more speedy in its results, and so little troublesome to the surgeon, one single application being generally sufficient, especially if, before applying the bandages, sufficient time is allowed to permit the subsidence of all tumefaction; for this purpose, the patient is permitted to rest in an easy position for three or four days, when, if the bandage does not become loosened by the subsequent atrophy of the limb, a single application will suffice for the cure,—but even in case of reiterated application, it is less troublesome than the usual method.

The following is Velpeau's method of application in fractured os femoris: the limb is in the

first place enveloped in a common roller; a piece of bandage is then crossed over the ankle, for the purpose of extension, and over these is placed another roller, thoroughly impregnated with the prepared paste; compresses of coarse paper, similarly soaked, are applied over the fracture, and other prepared rollers applied over these,—coarse pasteboard compresses, softened by similar soaking, are also applied, and kept in position by other rollers. The extension is now made by tying the bandage from the ankle to the foot of the bedstead, (which are all of iron in these hospitals,) and counter-extension is made by a strap passed between the thighs, and made fast to the bedstead above the head. The bandages harden in a few hours, and the limb is incased in a solid coat of mail.

Experiments have been made with numerous adhesive materials, such as starch, glue, paste, gum, &c., as substitutes for the "Dextrine" bandages now used exclusively at La Charité, all the others having been proved less effectual; gum arabic bears the nearest approach to it, but this is too expensive. The "Dextrine" is made by boiling starch in dilute nitric acid, and when separated from the liquor and dried, the powder costs about thirty cents a pound. One great advantage which this powder possesses over starch is, that it may be made into a paste with *cold* water, the former requiring boiling water. A very excellent and cheap substitute for linen or muslin bandages has been found in coarse paper, cut into suitable length and breadth, and soaked in this paste previously to their application; there can be nothing more effectual than a Scultet's bandage thus applied,—a method of economizing by no means beneath the notice of Parisian hospital surgeons, especially since a recent ordinance of government, which obliges them to substitute paper for linen compresses—the savings thus accruing to be devoted to the gilding of that magnificent temple, the Madeleine church! A more detailed account of this "Dextrine" may be found by referring to "Orfila's Chemistry."

M. Velpeau has been most unfortunate in the loss of patients in La Charité, in which hospital the mortality has been greater than in any other establishment. In addition to the usual causes which have gained for this hospital so mortifying a distinction, there has prevailed during the last winter and present spring an erysipelalous diathesis, which has desolated its wards,—so that a puncture of a nail, the simple operation of extirpating a small ganglion from the neck of a

healthy subject, the operation for the radical cure of varicocoele, and amputations of all kinds, fractures, &c., I have seen terminate fatally in numerous cases; and yet M. Velpeau continued his operations, and appeared astonished himself at their want of success, and is far from taking advantage of the best means of averting the evil; his constitutional treatment is worse than nothing. A patient was admitted with a wound in the heel by a nail; erysipelalous inflammation followed, and was continued to the ankle-joint, producing suppuration, irritation, and death. No measures were resorted to in order to rally the powers of a broken constitution; and in the autopsy and lecture on this subject, M. V. expressed his inability to explain his want of success in the treatment of the case, and viewed the death of a patient from the simple puncture of a nail as an opprobrium to surgery! But human life, it is said, is of very little account with French surgeons. M. V. operated five times successively for disarticulation of the knee, and in every case his patients died.

But M. V. is a most dexterous and fearless operator; and if his hospital was more fortunately constituted, would doubtless be more successful. I have seen him twice remove tumours involving large portions of the lower jaw, with complete success; but he frequently operates needlessly and recklessly: he is more anxious to display his dexterity than to cure his patient. As a lecturer, M. Velpeau is quite too eloquent, the idea being lost in the midst of verbiage; hence, M. Lisfranc has given him the soubriquet of "le Paroquet," and sometimes he calls him "the Blacksmith"—M. V. having been educated to that trade—of which, however, he is in no manner ashamed, frequently alluding to the period of his life when he was "un maréchal." M. Velpeau's address is any thing but that of a gentleman. His personal appearance is vulgar, and his aspect forbidding; but his ugly countenance is agreeably relieved by a noble and expansive forehead, to which "oasis" he undoubtedly owes all his celebrity. He has a most disgusting habit of using the long, thin hair which covers his head, as a mop, on which to wipe his hands when soiled by some putrid piece of pathological anatomy on which he is expatiating before his class, every few minutes passing his fingers through his hair. It is to M. V.'s honour that he is never abusive of his confrères, though very frank in his intercourse with them, as is well exemplified in the following anecdote. Two of

my friends, an English and American physician, called recently on M. V. at his office. On being ushered into an adjoining apartment, they overheard M. V. and another person altercation in the highest tone of voice; (this visiter proved to be Baron Heurteloup.) They could distinctly hear M. V. address the Baron in the following manner:—"Mais, M. le Baron, vous savez que vous êtes un grand menteur." When the Baron appeared to become furious, demanding to know what he meant by such an assertion, M. V. continued—"Soyez tranquille, soyez tranquille, M. le Baron; mais vous savez, entre nous, vous savez que vous êtes grand menteur!" Here the subject was dropped; M. le Baron, (who, by the way, I conceive to be too much of an adventurer,) not considering it any insult to be called by a name which he himself is very liberal in conferring on his confrères, especially as he was not aware that any third person was a witness to the scene.

CLINICAL LECTURE.

LECTURE ON DISPLACEMENTS OF THE UTERUS, *delivered by W. HARRIS, M. D., at the Philadelphia Medical Institute.*

ANTEVERSION OF THE UTERUS.

ANTEVERSION is the opposite of retroversion. In this displacement the uterus lies horizontally in the antero-posterior direction of the pelvis, with the fundus towards the symphysis pubis, while the os tincæ is turned backwards and is high up in the hollow of the sacrum, pressing against the rectum.

As the direction of the uterus, in its natural situation, is parallel with the axis of the superior strait of the pelvis, which is an imaginary line extending from the umbilicus above, to the middle of the last bone of the sacrum below, it is evident that the natural inclination of the fundus uteri forwards, predisposes that organ to the displacement called anteversion, especially when the bladder is empty. And Madam Boivin says, in the third chapter of her work "On the Diseases of the Uterus," that anteversion is one of the most common displacements to which the uterus is subject, but that it is overlooked by physicians, "because it is most frequently complicated with some other affection of this organ, which exclusively occupies the attention."

Professor Moreau, on the contrary, observes that "anteversion takes place less frequently than retroversion, and that the unimpregnated uterus is more liable to this displacement than the gravid. In the latter state of the organ, its occurrence is excessively rare."

THE CAUSES OF ANTEVERSION.

The causes which produce this displacement are like those that produce retroversion, such as

sudden and heavy falls, severe blows, violent vomiting, large pelves, injuries sustained in parturition, a morbid condition of the *utero-sacral* ligaments, travelling in carriages upon rough roads, long and fatiguing journeys, and, according to Levret, "a more than ordinary development and engorgement of the anterior parietes of the uterus itself." But this engorgement or hypertrophy of the anterior parietes, is, doubtless, entitled to be ranked among the effects rather than the causes of the mal-position, as the thickening is, according to the observations of Desormaux, "in proportion to the duration of the displacement." Moreover, in retroversion, when the fundus lies in the reverse direction, the posterior walls of the uterus have been found similarly hypertrophied.

Professor Moreau thinks that one of the most common predisposing causes of this mal-position, is an extraordinary degree of obliquity of the pelvis, in which the plane of the superior strait dips down anteriorly more than usual, and, consequently, there is a greater obliquity in the direction of the uterus, the axis of which corresponds with the axis of the abdominal strait. "The exciting causes," says he, "are nearly the same as those that produce retroversion; with this difference only, that in anteversion the displacing force must be exerted upon the posterior face of the uterus, in order to carry the fundus forwards and downwards, whilst in retroversion, the displacing impulse must be made in the opposite direction."

In the first case related by Levret, the displacement was produced suddenly by the patient falling upon her knees. In the two others which he relates, the displacement came on slowly, without any appreciable cause.

In Chopart's case, the displacement was occasioned in the second month of pregnancy, by vomiting. In another case, in a silk weaver, reported by Desgranges, it was the consequence of the repeated effort of pressing the foot upon the treadle of her loom. Madam Legrand's case of incurable anteversion, was the result of adhesions of the os uteri to the posterior parietes of the vagina. And Lehrbuch ascribed his case to an accumulation of fæces in the sigmoid flexure of the colon.

THE SYMPTOMS OF ANTEVERSION.

The patient afflicted with this complaint, experiences dull pains in the hypogastric region, and a sense of fulness or weight about the rectum. She has a frequent desire, moreover, to void her urine, which she always accomplishes with difficulty. The horizontal position affords her great comfort, and she is equally easy whether she lies upon her back or either side, if her limbs are flexed, so as to relax her abdominal muscles. But when she again resumes the erect position, she experiences the sensation of a body falling behind the pubes, which again occasions a retention of urine, and the same frequent desire to evacuate it. These symptoms have induced the attending physician to suspect the presence of stone in the bladder, and his suspicions have

sometimes been strengthened by beholding the stream of urine suddenly arrested. And the urine itself, in old cases, becomes thick, reddish, sedimentous, and gravelly.

If a patient labouring under this displacement is unable to evacuate her urine out of bed, after she lies down upon her back, she will feel a body or weight retire from the bladder, when the emission of the urine will take place without much difficulty.

If a sound be introduced into the bladder, it meets a solid, resisting, but not a sonorous body, resembling the sensation afforded by an encysted stone or scirrhus tumour; but an examination, *per vaginam*, will dissipate all uncertainty. The fundus of the uterus will be discovered to have fallen forwards behind the symphysis pubis, while the *os tincæ* will be turned backwards towards the hollow of the sacrum near the sacro-vertebral angle. It is sometimes difficult to reach either the neck or mouth of the uterus through the vagina, but in such cases the diagnosis may be perfected through the rectum.

THE TREATMENT.

The indications in the treatment are to restore the displaced organ, and, by appropriate means, to maintain it in its place.

The reduction is more easily accomplished than it is in retroversion.

The patient should be placed upon her back, with her breech projecting over the edge of the mattress, her thighs bent upon her body, and her legs upon her thighs, in order to relax the abdominal muscles. Her pelvis should be more elevated than her shoulders. The position is the same as that recommended in preternatural labour.

The operator should now introduce a large female sound into the bladder, and, afterwards, with the index finger of the right hand should reach the *os tincæ*, and, hooking it over the *anterior lip*, should draw it slowly from the hollow of the sacrum towards the symphysis pubis; at the same time, by means of the sound in the bladder, the *fundus uteri* should be pushed upwards and backwards to its natural position. An assistant may contribute to the restoration by making gentle pressure upon the hypogastrium, just above the symphysis pubis.

Having reduced the displaced organ, a pessary should be introduced, and the patient directed to lie upon her back for several days, after which she should, at first, walk about with care, lest any sudden jar or fall should occasion a return of the displacement.

The cup-in-ball (*bibloquet*) pessary, having a deep cavity to receive the cervix uteri, is the kind that is preferred in cases of anteversion. The common concave glass pessary will answer the purpose very well. This instrument should be applied, according to Levret, twelve or fifteen months, but Désormaux says it may be discontinued much sooner.

In every instance, the pessary produces more or less leucorrhœa, which diminishes, after it is

worn for some months, and subsides, as soon as it is removed. If the patient should be much incommoded by fluor albus, and heat in the vagina, I am persuaded that the *perpetual douche*, invented by Professor Jackson, might be used with great advantage.

Whether the utero-abdominal supporter of Mrs. Betts, or Dr. Hull, would answer better in anteversion than the pessary, is yet to be proved.

A little reflection upon the subject must satisfy every unprejudiced mind, that the supporter meets exactly every indication in this displacement.

The celebrated Levret had the honour first to notice this displacement, nearly a century since, which he designated by the name of *renversement transversal*. The discovery was made by an *autopsy* of the body of a woman who died in consequence of an operation that had been performed upon her for a supposed encysted stone of the bladder.

Upon inquiry of her friends, after her death, Dr. Levret learned "that she was thirty years of age; that she had never menstruated; that about ten years before, she had a violent fall upon her knees, after which she was not able, without difficulty, to evacuate either her bladder or rectum, and that, although she never had had any children, she had often been thought to be pregnant, not only on account of the derangement of her catamenial function, but because of the pains which she experienced continually, more or less violent, in the lower part of her abdomen, especially when she was much in a standing position.

M. Levret was afterwards called, in consultation, by M. Lomain, to a patient whom he had previously sounded, and pronounced, as his judgment, that she had an encysted stone in her bladder. But when Levret heard the patient state, in answer to his enquiries, that "for twelve months immediately preceding, she had been much distressed with a dull pain in the hypogastrium, accompanied by an annoying sense of weight about the fundament and posterior parts of the pelvis, which were greatly exasperated when efforts were made use of to empty the contents of the bladder and rectum; and that when she assumed a standing position, she was apt to feel a heavy body, as if falling down within her bladder, which at the same time that it occasioned a desire to make water, deprived her of the power of obeying the call; but that when she lay down again, she felt the same body retire to its former situation, after which she could evacuate the contents of her bladder with less difficulty"—I repeat, that when Levret heard these facts stated, he drew the parallel between them and the history of the case of his former patient, and expressed his apprehension that this was another case of anteversion. M. Lomain now made a *per vaginam* examination, which he had not thought necessary to make before, when he found that Levret's apprehensions were well founded.

The organ was accordingly restored, the pessary introduced, and the patient eventually cured.

While wearing the pessary, this patient, we are told, "was much incommoded by a troublesome fluor albus," which, during the latter months of the treatment, diminished and subsided entirely after the instrument was withdrawn.

Levret attended a third case, in consultation with M. Conteveaux, in which the symptoms, treatment, and result, were nearly the same as in the second. In this case, however, the pessary was even more irritating, as "a troublesome leucorrhœal discharge, accompanied by a considerable sense of heat and smarting pains in the vaginal surfaces," followed its introduction.

Moreau relates a case to which he was called on the 4th of April, 1816, which, in its history, treatment, and result, resembles so nearly the second case of Levret, that a statement of it here would throw no new light upon our subject, neither would the several cases related by Madame Boivin and Madame Lachapelle.

To those who wish to investigate this subject more thoroughly, I would recommend for their perusal, the works of Davis, Moreau, and Levret, as well as those of Madame Boivin, and Madame Lachapelle.

DOMESTIC SUMMARY.

Medical Institution of Yale College.—The Annual Circular of this Institution announces a list of seventeen graduates, and of two licentiates in medicine, for the year 1839.

American Phrenological Journal.—The June number of this Journal has come to hand, and contains an interesting variety of matter. It is published at \$2 per annum, by Mr. A. Waldie, 46 Carpenter street.

FOREIGN SUMMARY.

On the Varieties and Treatment of Fractures of the Ribs. By J. F. MALGAIGNE.—[The name of Malgaigne, attached to any essay, the subject of which is fracture or disturbance of bone, is sufficient to call attention to it. The author of the communication which affords the materials for the following analysis, has studied the subject in a comprehensive and scientific manner; and we doubt not that there is in the present paper not a little that will be novel and interesting to many of our readers.]

From a review of our knowledge on the subject of fractures of the ribs, M. Malgaigne concludes that the clinical and experimental history of this affection is still a desideratum; all which is at present taught in the schools being unsupported by anything like proof. The author says that his attempt will be to supply the necessary information; for which purpose he has studied the normal figure of the ribs, he has instituted experiments upon the corpse, has collected cases from the living, has procured pathological specimens, and has gathered from books such information as was available for his object.

Causes of fractures of the ribs. External causes. The opinion general maintained, that fracture of a rib takes place *almost always towards the middle of the rib*, is stated to be incorrect. M. Malgaigne says that the majority of such fractures are seated in the anterior half of the rib. Direct causes may produce their effects on all parts; but the anterior parts are the most exposed to their action, the posterior portions being protected by muscles and by the scapula; the middle, by the arm and the shoulder. And with respect to indirect causes, M. Malgaigne has very often tried to break the ribs by a sudden and forcible pressure on the sternum, but the fracture has always been in the anterior half, and generally nearer to the sternum than to the middle of the ribs. Several reasons may be given why this should be the case. The posterior extremities of these bones being more elevated than the anterior, if, for example, the heel is pressed upon the sternum, on a level with the insertion of the sixth rib, the pressure corresponds posteriorly almost with the level of the tenth rib. The first effect of the pressure upon the anterior extremity of the rib is to force it backwards and downwards simultaneously; that is to say, to diminish in one direction, but to increase in another, the interval which separates the extremities of the bone. When fracture takes place, therefore, it is not in consequence of simple increase of the curve, but because of the twisting which results from the depression of the anterior extremity. As this movement takes place especially in this extremity, it is quite natural that it should more particularly suffer. Again, the anterior pressure acts upon the sternum beyond the anterior extremity of the rib, prolonging the arch in this direction; but the posterior pressure acts particularly on that part of the bone which is just anterior to the angle, and which projects so much behind, that the body rests upon it in decubitus. Now, these two circumstances explain why the centre of the arch, the curve of which is increased by the fracturing force, is much anterior to the centre of the bone. And, lastly, anatomy indicates and experience reveals another reason of the fact above stated. Pressure does not act on all the ribs simultaneously; and those which are not pressed upon, supporting the others, prevent them from yielding as much as if they were isolated. Thus, for example, press with the hand upon the sternum, on a level with the sixth rib; the sternum sinks, and, at the same time, approaches the vertebræ. But, increase the pressure, the bone does not sink any further, and its superior extremity, held firmly by the ribs, remains almost immoveable, whilst the inferior is pressed towards the vertebræ. The ribs follow this movement unequally; the sixth rib, being more directly subjected to pressure, bends more; the seventh and the fifth, somewhat less, and so on. So that the point at which flexion commences varies with each rib, and, consequently, cannot be always the centre of the arch which they describe; and, lastly, this point of flexion cannot be very far separated from

the sternum, because of the resistance of the neighbouring ribs. From this binding together of the ribs when they resist pressure on the sternum, it happens that in almost every case several ribs are simultaneously fractured, when the cause of such fracture is indirect; and, on the other hand, as these fractures always take place in the anterior half of these bones, a series of fractured ribs in the vicinity of the sternum, excepting where they may have been caused by the wheel of a carriage passing over the ribs themselves, are almost inevitably dependant on an indirect cause. Many individuals suffered fractures of the rib in an enormous crowd, assembled on the Champ de Mars, in 1837. Of twenty-three who died, seven had fractured ribs. The number of ribs which were broken, varied from two to thirteen in the same individual; and all the fractures were anterior, and between one inch and a half and two inches and a half from their cartilages. But a single rib may be broken by an indirect cause; in which case the pressure has acted solely upon the cartilage, or upon the extremity of this rib.

With regard to the *internal causes* of fracture of the ribs, we can here only allude to several cases, which M. Malgaigne has collected, of fracture taking place during cough, in cases where there does not appear to have been any peculiar fragility of bone. The individuals to whom the accident happened were all, however, somewhat advanced in years. Drs. Gooch and Graves are alluded to by the author as having published cases of this description. In a diagnostic point of view, the fact, possibly of less rare occurrence than is supposed, should not be lost sight of.

There are three principal kinds of fractured ribs: 1. *Incomplete fractures*. 2. *Simple fractures*. 3. *Multiple fractures*.

1. *Incomplete fractures*. This may occupy the inferior or superior half of the bone, or the internal or external surface. Fractures of the latter kind are simple or multiplied, most generally affecting the internal table, but sometimes the external alone. Direct or indirect causes produce them, and several ribs are commonly affected at the same time. These fractures are so readily produced, either upon the entire corpse, or upon a rib isolated and separated from the soft parts, that it is difficult to resist the inference that incomplete fractures of the ribs are of much more frequent occurrence than we appear justified, from our actual knowledge, in supposing them to be. Two causes may account for our inability to decide this doubt: the negligent mode of diagnosing fractured rib, and the infrequency of autopsies. But there are cases of incomplete fracture on record, occupying the various situations already mentioned. Such cases are detailed by M. Malgaigne.

2. *Complete simple fractures*. These are either oblique or transverse, the fracture being clean: or they are very irregular, each fractured surface being covered with projecting points and angles.

3. *Multiple fractures*. These fractures, although scarcely recognised, are probably as fre-

quent as the second variety. The double fracture is sometimes incomplete. Complete fracture may be associated with an incomplete fracture, or the fracture may be complete in two situations, or there may be three or even four fractures in the same rib. In the "Musée Dupuytren," two anatomical specimens are preserved, where several ribs are broken together; in one case, all the fractures are simple; in the other, they are double. Of nine anatomical specimens, in the possession of M. Malgaigne, five exhibit a consolidated simple fracture; two present double complete fractures of the same rib, the middle fragment being from three to four inches in length; one shows the traces of three fractures, the hindermost of which, close to the angle of the rib, appears to have been complete, and the other two, half an inch and four inches anteriorly, are incomplete. In the last specimen are traces of four fractures: one towards the angle of the rib, complete; a second incomplete, and half an inch more anterior; and others, more anterior still, which appear to have been complete. The callus of complete fractures may be readily distinguished, however small may have been the displacement: it surrounds the rib like a rough and projecting ring; whilst in incomplete fractures the external face (unbroken in all the specimens seen by M. Malgaigne) shows no vestige of bony deposit, and the imperfect ring of callus is only seen on the inner surface or on the borders of the bone.

Displacements to which fractured ribs are subject. In the *incomplete fractures*, when there is but a fissure in the bone, whether longitudinal or transverse, there is no displacement. M. Malgaigne broke off the inferior border of the rib with the blow of a hammer, and here there was displacement; and he has a specimen of a fracture of the internal table and diploe, effected by himself, the external table being simply somewhat depressed opposite the fracture, a depression which would probably escape observation on the living subject. But the most important circumstance in this specimen is, that the anterior fragment of the inner table projects inwards about a line, and that this projection cannot, by any movement, be replaced. By compressing the extremities of the ribs, so as to increase its curve, the internal fragment was in some degree replaced; but whilst increasing the pressure, so as to complete the reduction, the external table was broken, and the fracture then rendered complete. A similar result was attained from fracturing the external table and the diploe, without injuring the internal table. A fragment projected externally, which could not be reduced by any means. M. Malgaigne has an anatomical specimen representing, he thinks, this fracture; and he supposes that such an external projection might take place as to be evident, on examination, through the soft parts. The author forced in the seventh rib by a violent blow with a hammer. In the situation of the blow, an angular concavity could be felt, instead of a fracture: the internal table was broken in two points, separated from one

another about two inches and a half, and the fragment resulting from this fracture was only adherent by its centre to the rib. Cheselden speaks of having found, in autopsies, upon the external surface of the ribs, an impression of the thumb and four fingers of nurses. It is supposed that the condition of parts may have resembled that just described. M. Malgaigne does not maintain that, even in multiple fractures of this kind, displacement always takes place. When the depression affects several ribs, as happens from the wheel of a carriage, the diagnosis is immediately evident. A depression of various extent and size exists; and if, in examining it with the fingers, no projection of any fragment is felt, if the pressure increases, for an instant, the depression, without producing any projection, the existence of an incomplete multiple fracture of the internal table may be diagnosed.

In the *simple complete fractures*, there may often be no displacement, when, for instance, the periosteum is untorn, or the fracture very serrated; but displacement as often occurs, although, frequently, not to such a degree as to be perceptible through the soft parts. Of such displacement, M. Malgaigne has described examples in his possession. In one case the posterior fragment projects inwards for nearly a line, and upwards in about the same extent. In a second, the displacement is of the anterior fragment, downwards and backwards about a line. A third shows a projection of the posterior fragment outwards. In one specimen, preserved by Dupuytren, several ribs are affected with simple fracture; the fracture is oblique, from one border to the other, but in opposite directions, and the displacement varies in consequence; thus, in the first of the broken ribs, the anterior fragment projects upwards; in the second, it is depressed beneath the posterior; and in the third, the displacement is similar to the first. In a skeleton, some of the ribs of which had been fractured during life, at about four fingers' breadth from their cartilages, the appearances were as follows: The anterior fragment of the fifth was carried inwards and downwards, the superior interosseous space being evidently diminished backwards; the anterior fragments of the third and fourth were depressed inwards; there was no displacement of the second, and the fracture could only be estimated by the roughness of the callus. Others have noticed such union as clearly indicated displacement: some attributed this to the treatment employed, the pressure recommended by Petit. But this explanation is inadmissible, as evidence of displacement exists when no such treatment was employed. Similar displacements are effected by blows upon the sternum and ribs of the corpse—experiments which have been frequently made by M. Malgaigne.

Multiple fractures. These, when complete, sometimes occur without displacement; more commonly there is displacement of one of the fragments, the other remaining almost in place;

and sometimes all the fragments are simultaneously displaced. M. Malgaigne regards external violence and the configuration of the fracture, as the causes of the displacement. An external shock, for instance, partly fractures a rib: it acts first by thrusting it inwards; a greater force breaks the internal table and disposes, the denticulated form of the fractured surfaces prevents the return of the rib to its original position, and hence there remains a depression of the unbroken external table of the bone. Is the fracture complete? If the fracture is transverse and smooth, there is commonly no displacement, the bone returning, by its elasticity, to its original situation. But exception must be made for fractures occurring very near the sternum; partly in consequence of the ligamentous attachment of the ribs to this bone, the anterior fragment moving inwards and outwards, and which, when it has been carried inwards, has not, in consequence of the articulation, the elasticity of the posterior fragment. The case is similar, where a broken portion has become bent by a second fracture, either complete or incomplete; there remains no elasticity by which it may regain its position. When the fracture is oblique, the direction of its obliquity commonly determines that of the displacement. The denticulated extremities of fractured ribs are the most frequent among the causes of continued displacement; but with regard to fractures near the sternum, a special cause of displacement in a certain direction exists, and which also tends to reproduce displacement when it has been remedied. Pressure upon the sternum depresses the sternal portion rather than the other, and this pressure tends also to carry it downwards, motion in the two directions sometimes coexisting. This (the sternal) portion being depressed, the posterior fragment projects simply because it remains in its place. Decubitus on the back, a circumstance well deserving the attention of the surgeon, augments this projection, the posterior fragment of the ribs being pushed forwards; and if the patient lie upon the fractured side, there is still greater projection. The nearer the fracture is to the sternum, the more evident are these circumstances, and most particularly in fracture of the cartilages. M. Malgaigne has found, in the last case, that by varying the pressure upon the ribs, the anterior or posterior fragment might be made to project; a fact from which he has derived a method of treatment, to be noticed.

The *diagnosis* must be inferred from what has been said concerning the kinds of displacement. It is frequently very difficult, and always requires very great care. There are some special causes of error, which should be borne in mind. The insertions of the obliquus descendens and serratus magnus muscles might give rise to the notion of displacement, in consequence of their abrupt projection beneath the finger, especially when pain causes any spasmodic contractions in these muscles; and in some subjects there are remarkable projections at the union of the cartilage with the bone of the rib.

Treatment. The treatment of fractured ribs is shown, by what has preceded, to be less simple than most surgeons have conceived it to be. The fractures without displacement require only to be kept at rest; those with displacement, and which are not disposed to be displaced when reduced, require reduction, in addition; and when there is a tendency to displacement after reduction, there is a third indication to fulfil, *i. e.* to prevent such secondary displacement.

1. *Means of keeping the ribs immovable.* The rules laid down for using the bandage for the trunk are, that it is indispensable when it alleviates pain caused by respiratory efforts; that when there are no such pains, it is needless to employ the bandage; and that if pain continues, notwithstanding its use, it is both useless and injurious. In individuals with a large chest and vigorous constitution, the circular bandage is safe. M. Malgaigne prefers the following mode of applying it. Surround the chest, first of all, with a common bandage, and apply over this a piece of cere-cloth, (*sparadrap*), about three fingers broad, and sufficiently long to pass twice round the body. But in feeble individuals, with narrow chests, agitated by chronic coughs or paroxysms of asthma, the indication is to confine the constriction to the injured side; an indication which it is not easy to fulfil. Decubitus upon the injured side would be very useful, could it be borne: if not, a demi-cuirass, made by soaking a bandage in an amylaceous decoction, might fulfil the proposed indication. But on this point M. Malgaigne only throws out suggestions, not having made it the subject of experiment. But he tried, in the following manner, to limit the action of the thorax by bands of cere-cloth (*sparadrap*.) The commencement of one band was applied on a level with the anterior extremity of the seventh rib of the right side, thence passed around the left side of the thorax, beneath the left scapula, and over the right shoulder: from this point it was passed a second time around the left side of the thorax, ending on a level with the crista of the right ilium. The costal respiration of the left side was thus evidently impeded, whilst it continued quite free on the right side. It would appear that the left ribs might be much more directly acted upon, by surrounding them with an oblique bandage, the two ends of which should cross one another at the right hip; but in this case the anterior part of the bandage, by compressing the abdomen, would interfere materially with the diaphragmatic respiration, which it is very important in these cases properly to manage. Or again, one side of the thorax might be acted upon by means of the spring of a hernial truss, the sternum and the spine being points on which the spring should press. A strap passing over the opposite shoulder might be used to support this, and, if necessary, a large vertical splint might be placed between the centre of the spring and the convexity of the ribs. This apparatus is applicable for the fulfilment of another indication, hereafter to be noticed.

2. *Means of reducing the displaced fragments.*

In simple or double fractures, with depression of one fragment, the indication may consist only in elevating the depressed portion. But in some cases there is an actual projection of the other fragment outwards, produced by the bad position of the patient; but change of position suffices to rectify this. With regard to the former indication, M. Malgaigne observes that he had frequently tried the experiment on the corpse, of pressing gently downwards the fragment which remained in its proper situation, until it came in contact with the depressed fragment. He found that the inequalities of the two broken surfaces fitted into each other; and that, on removing the pressure, the elasticity of the rib brought back into its right position the former fragment, bringing the depressed portion with it. To effect this, certain conditions are necessary: if the fracture occupies the middle of a true rib, or is further backward, it is of little consequence which is the depressed portion; if it is more anterior, the posterior fragment alone possesses sufficient elasticity to produce the above effect, so that, were this fragment itself depressed, it would not be readily elevated. With regard to the false ribs, whatever situation the fracture may occupy, the anterior fragment can only be elevated by means of the posterior. Fortunately, by virtue of this elasticity, the depression of the former is much more frequent than that of the latter. Two cases are related in support of these views of treatment, derived from experiment upon the corpse. In one of these, although the reduction was not accomplished, the manipulations caused a sudden and remarkable relief of pain, leading to the belief that some irritating portion of bone might have been removed from contact with the lung. Remarking on the cases alluded to, M. Malgaigne observes that it required but in a trifling degree to diminish depression of one fragment to cause an instantaneous cessation of most acute pain, very probably by disengaging the lung from a fragment of bone which was pricking and irritating it, and bringing back the projecting piece beneath the costal pleura. It is to these depressed portions of bone that may be attributed the acute pains and the visceral inflammations which sometimes accompany fractured ribs; and if it is remembered that, frequently, whether the fracture be complete or incomplete, the displacement may not appear at all externally, whilst there is a considerable prominence of a portion of the inner table of the bone, we may be disposed to regard this circumstance as of more importance than has hitherto been the case. Morbid anatomy confirms (although not with much proof) the above explanation. M. Malgaigne contends that the necessity is almost as great for removing fragments of bone from the lung, as for removing them when driven into the brain. He alludes to the various methods which have been suggested for effecting this object; and he suggests the following: to take a needle, covered like a tenaculum, to plunge it as far as the superior border of the depressed fragment, and thence to pass it over the inner surface, almost as far as the channel in which runs the intercostal

artery, employing the instrument then as a simple elevator. The incision may be thus avoided; and such a puncture is very harmless.

3. *Means of preventing return of displacement.* In fractures near the sternum, there is actual danger of this occurrence; and its causes are decubitus upon the back, and particularly on the injured side. The twofold indication is to keep the healthy side of the thorax forwards, so that the fragment which is attached to the sternum may be drawn in the same direction, and to keep up a constant pressure upon the portion which projects, equal in amount to the resistance afforded by the elasticity of the rib. The former indication is quite fulfilled in serious cases, by decubitus on the healthy side; and then, also, the little disposition of the ribs to move would render the second almost useless. But in less important cases, where the patient wishes to move about, and to walk, the two indications are fulfilled simultaneously by a truss for hernia, with a long spring, one extremity of which presses posteriorly upon the projection of the ribs, on the sound side; the other anteriorly, upon the posterior fragment itself. To obviate the injurious effects of prolonged pressure, compresses may be employed.—*Brit. and For. Med. Rev., from Archives Générales de Médecine.*

Cissampeline, a new vegetable base. By A. WIGGERS.—M. Wiggers announces that he has discovered in the root of *Cissampelos pareira*, a vegetable basis, which is obtained in the following manner. The root is boiled in successive quantities of water, acidulated with sulphuric acid, and carbonate of soda is added to the brown decoction. A precipitate is thus thrown down of a grayish-brown colour, which is washed and redissolved in water acidulated with sulphuric acid. The solution is boiled with animal charcoal, and after filtration, carbonate of soda is added. A dirty yellow precipitate falls, which is dried, pulverized, and then boiled with ether. A nearly colourless solution is obtained, and by distilling off the ether, the cissampeline is procured. To purify the substance completely, it is dissolved in weak acetic acid, and again thrown down by carbonate of soda whilst the solution is still warm; the precipitate is then washed and dried with care.

It is known that M. Feneulle, who is occupied with the analysis of the *Pareira brava*, has discovered the presence of a yellow bitter principle in which the active properties of the root seems to reside. Can this principle be the impure cissampeline?—(*Journal de Pharmacie*, January 1839,) from *Edin. Med. and Surg. Journ.*

On the preparation of Gentianine. By Professor DULK de Konisberg.—The experiments of Tromsdorff and Leconte have demonstrated in a decisive manner that the gentianine prepared according to the directions of M. Henri, cannot be regarded as the active principle of gentian. I

have found that the active bitter principle of this root may be isolated by the following process. Treat the coarse powder of the root with alcohol; distil off the alcohol, and dissolve the residue in water; filter the solution. The undissolved matter treated with ether furnishes a clear tincture, from which we obtain by evaporation the gentianine of M. Henri, quite insipid.

The aqueous solution has a very bitter taste, and must be fermented to separate the sugar, which cannot be easily done in any other manner. The liquid is then precipitated by the neutral acetate of lead; the precipitate is separated and thrown away. Into the bitter filtered liquor is poured the solution of the subacetate of lead, and a little ammonia, to precipitate the combination of vegetable matter with the oxide of lead; but care must be taken not to add too much ammonia, because this, as the stronger base, is apt to separate the vegetable matter from the oxide of lead. We thus obtain a yellow precipitate, which is washed with small quantities of water, for a large quantity decomposes the compound. The precipitate is then suspended in water, and decomposed by a stream of sulphuretted hydrogen gas. Filter and evaporate at a low temperature to dryness; treat the residue with alcohol of specific gravity 0.820, filter, and by evaporation is obtained a mass which contains no traces of crystallization.

This gentianine has a yellowish-brown colour; dried and triturated, it furnishes a yellow powder; it possesses the bitter taste of the root in a high degree. It is hygrometric, is almost insoluble in absolute alcohol, more soluble in common spirit, and very soluble in water. It reddens litmus; heated it melts, swells up, and burns without residue; it contains no azote. By its reaction and relation to bases it approaches the acids.—*Ibid.*

Medicinal properties of the gray oxide of zinc. By Professor SEMENTINI.—From a series of experiments made on the white and gray oxides of zinc, (the latter discovered by himself,) Professor Sementini, of Naples, draws the following conclusions: 1. the oxide of zinc possesses tonic properties, which it derives from its soothing the irritability of the nervous system; it is also anti-spasmodic and sedative. 2. This has long been known, but the use of the medicine has been abandoned, from the inconstancy of its effects. 3. That inconstancy arises from the facility with which it absorbs carbonic acid, and hence passes to the state of a subsalt. 4. The gray oxide does not absorb the acid, and is therefore always of uniform strength. 5. As the properties of a tonic and a sedative coexist in it, it may be used with the greatest confidence in cases of *irritative debility*. The dose to begin with, is from a fourth to half a grain, which may be increased to four or six grains, by an addition of a quarter of a grain every second day.—*Giornale dell. Sc. Med. Chir.*, No. 45, Marzo, 1838., from *Brit. and For. Rev. Med.*